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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,395	10/08/2003	Andrew P. Kahn	01-2621A	7436

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EXAMINER	
BULLOCK, IN SUK C	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	**Application No.** 10/681,395	**Applicant(s)** KAHN, ANDREW P.	
	Examiner In Suk Bullock	**Art Unit** 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _08 October 2003_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-9_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-9_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al (5,877,372) in view of Nierlich et al (5,998,685) and Brahma et al (5,482,616).

The Evans reference teaches selective dimerization of isobutylene to produce diisobutylene in the presence of a sulfonic acid resin catalyst such as Amberlyst A-15. The diisobutylene product is then hydrogenated in the presence of a hydrogenation catalyst to form the product isooctane. See col. 1, lines 5-10 and 36-37 and col. 2, lines 5-44. Evans also teaches that a variety of hydrogenation catalysts may be utilized (col. 4, lines 34-36).

Evans does not teach that the diisobutylene stream contains minor amounts of sulfur impurities and nor does the reference teach the step of removing the sulfur impurities employing a large pore zeolite. Evans also does not teach the claimed zeolites and a supported nickel hydrogenation catalyst.

The Brahma reference teaches that in a hydrogenation process a problem is often encountered in that the feedstock comprises sulfur impurities that adversely affects the life of a hydrogenation catalyst. Brahma discloses much attention has been directed to removing the sulfur impurities prior to hydrogenation. See col. 1, lines 12-18. Brahma further discloses the catalyst containing a hydrogenation component, i.e., nickel, on a support material. See col. 1, lines 39-45 and col. 2, lines 44-53.

The Nierlich reference is cited for its teaching of utilizing zeolites X and Y to remove sulfur compounds from a hydrocarbon feedstock. See col. 5, lines 11-35.

It is notoriously known in the general art of hydrocarbon conversion process the hydrocarbon feedstock comprises some level of sulfur impurities so that the conversion process would necessarily produce a product containing some level of sulfur impurities. As evidence, Brahma is cited for its disclosure hydrocarbon feedstock comprises sulfur impurities that adversely affect the life of a hydrogenation catalyst. Thus, in the process of Evans, it is expected that the dimerization product would contain some level of sulfur and, especially, in light of the fact that the dimerization process of Evans is indistinguishable from the instant claimed invention, i.e., same feed (isobutylene) and same catalyst (sulfonic acid resin).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Evans by removing the sulfur impurities contained in the dimerization product with a zeolite sorbent because Brahma teaches sulfur impurities have deleterious effect on a hydrogenation catalyst and Nierlich teaches sulfur impurities may be removed with a zeolite such as zeolite X and zeolite Y.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Evans by utilizing a nickel supported catalyst because Evans discloses that a variety of hydrogenation catalysts may be used and Brahma discloses a supported catalyst comprising nickel as an effective hydrogenation component.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is 571-272-5954. The examiner can normally be reached on Monday - Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Walter D. Griffin
Primary Examiner

I.B.